King County Metro Public Transportation Agency Safety Plan

2024

King County Metro Transit Department

201 S. Jackson St., Seattle, WA 98104This page intentionally left blank.

REVISION SUMMARY

Date	Revision #	Changes
2020	1.0	First Issue
2023	2.0	Incorporation of new safety policy; addition of Public Transportation Agency Safety Plan Review Committee information; update of Safety, Security and Quality Assurance responsibilities; update of safety targets; and addition of new safety risk management matrix.
2024	3.0	Removal of Agency Safety Plan references and replaced with Public Transportation Agency Safety Plan; update to format providing more consistency, useability, and better comprehension; update of safety targets; update to Senior Management roles and responsibilities related to PTASP implementation; Removed Executive Safety Committee and replaced with the Bipartisan Infrastructure Law (BIL) Committee.

PUBLIC TRANSPORTATION AGENCY SAFETY PLAN REVIEW COMMITTEE APPROVAL

King County Metro Transit Department and its labor partners are mutually committed to providing a safe workplace and increasing employee engagement on safety and security matters. The Public Transportation Agency Safety Plan Review Committee is a joint effort to review Metro's Public Transportation Agency Safety Plan in advance of formal adoption through the King County Council. This committee ensures the Metro Public Transportation Agency Safety Plan is making sufficient progress toward compliance with the requirements of 49 U.S. Code § 5329, chiefly that it reflects the specific safety objectives, standards, and priorities of the transit agency, and incorporates SMS principles and methods tailored to the size, complexity, and scope of the system. In future reviews this committee will become the Bipartisan Infrastructure Law (BIL) Committee.

By signing this document, the members of the Public Transportation Agency Safety Plan Review Committee verify that this document addresses all applicable requirements of the Public Transportation Safety Program and the National Public Transportation Safety Plan regulations.

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Signature

4/11/2024
Date

Rebecca Frankhouser, Chair
Director and Chief Safety Officer
Safety, Security, and Quality Assurance
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4/4/2024
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Gay Boyce, SMS Executive
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4/3/2024
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Stanley Straker, Committee Member
Transit Mechanic
Vehicle Maintenance Division
King County Metro

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CONCURRENCES AND APPROVAL

King County Metro Transit Department Public Transportation Agency Safety Plan

Version 3.0 dated January 2024

By signing this document, the Accountable Executive and the Safety, Security, and Quality Assurance Director and Chief Safety Officer verify that the Public Transportation Agency Safety Plan addresses all applicable requirements of the Public Transportation Safety Program and the National Public Transportation Safety Plan.

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4/11/2024
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Rebecca Frankhouser
Director and Chief Safety Officer
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5/7/2024
Date

Michelle Allison
General Manager/Accountable Executive
King County Metro

(See Motion attached at end of Public Transit Agency Safety Plan)
King County Council
(Board of Directors equivalent)

LIST OF ABBREVIATIONS

Abbreviations	Meanings
BIL	Bipartisan Infrastructure Law
CAP	Corrective Action Plan
CSO	Chief Safety Officer
DOSH	Division of Occupational Safety and Health
EHS	Employee Health and Safety
ESC	Executive Safety Committee
EMG	Extended Management Group
FMEA	Failure Mode and Effects Analysis
FMECA	Failure Mode and Effects and Criticality Analysis
FTA	Federal Transit Administration
HAR	Hazard Assessment Report
ICS	Incident Command System
KCM	King County Metro
LMS	Learning Management System
LCC	Link Control Center
MCP	Maintenance Control Plan
MLT	Metro Leadership Team
MBR	Monthly Business Review
N/A	Not Applicable/Not Available
NIMS	National Incident Management System
NPTSP	National Public Transportation Safety Plan
NTD	National Transit Database
NTSB	National Transportation Safety Board
OS	Operations Safety
OSFR	Operator Service and Facilities Reports
PPE	Personal Protective Equipment
PTASP	Public Transportation Agency Safety Plan
QA	Quality Assurance
SSC	Safety and Security Certification
SSCRC	Safety and Security Certification Review Committee
SSDMP	Safety and Security Data Management Program
SSaM	Safety and Security Management
SACAP	Safety Assurance Corrective Action Plan
SMS	Safety Management System
SPT	Safety Performance Targets
SRM	Safety Risk Management
SSQA	Safety Security and Quality Assurance
SSQASLT	Safety Security Quality Assurance Senior Leadership Team
SEM	Security and Emergency Management
SOP	Standard Operating Procedures

SoGR	State of Good Repair
SLT	Strategic Leadership Team
SSEPP	System Security and Emergency Preparedness Plan
TAMP	Transit Asset Management Plan
TCC	Transit Control Center
TSSA	Transit Safety and Security Academy
TSA	Transportation Safety Administrator
USDOT	U.S. Department of Transportation
L&I	Washington State Department of Labor and Industries
WSDOT	Washington State Department of Transportation

INTRODUCTION

The King County Metro (KCM) Public Transportation Agency Safety Plan (PTASP) is a comprehensive document intended to ensure the safety of customers, employees, contractors, emergency responders, and the general public. This plan provides information on KCM's Safety Management System (SMS). During the SMS implementation process, acceptance of this Public Transportation Agency Safety Plan by the Federal Transit Administration (FTA) does not constitute approval or acceptance of any process or component of the SMS. KCM employees and contractors are required to comply with the policies and procedures as they are being implemented during the SMS phases in this plan.

The KCM Accountable Executive function is carried out by the General Manager. The KCM General Manager meets the requirements of 49 Code of Federal Regulations (CFR) 673.5 and 49 CFR 673.23(d)(1). See Section 2 (Organizational Roles and Responsibilities) of this plan for more information on the General Manager's role and responsibilities relative to SMS.

The KCM Chief Safety Officer (CSO) meets the requirements of 49 CFR 673.5 and 49 CFR 673.23(d)(2). The Chief Safety Officer must maintain training consistent with the requirements of 49 CFR 672: Public Transportation Safety Certification Training Program. Additionally, the CSO must attain the Transit Safety and Security Program (TSSP) Certificate in Rail and Bus. See Section 2 (Organizational Roles and Responsibilities) of this plan for more information on the Chief Safety Officer's role and responsibilities relative to SMS.

KCM is committed to developing forward-thinking innovation in managerial and technical safety processes. To that end, this PTASP establishes SMS principles as its foundation. The four SMS components that apply to all facets of the Authority include the following.

Section I: Safety Policy–- Aligns all divisions of KCM under an SMS to prioritize safety in management decision making.

- Safety Management Policy Statement
- Organizational Roles and Responsibilities
- Integration with Public Safety and Emergency Management
- Safety Management System Documentation and Records

Section II: Safety Risk Management–- Processes that identify hazards and evaluate and resolve risks.

- Hazard Identification and Analysis
- Safety Risk Assessment

Section III: Safety Assurance–- Ensure all objectives are met through effective data collection and assessment.

- Safety Performance Monitoring and Measurement
- Management of Change
- Continuous Improvement

Section IV: Safety Promotion–- Encourage workplace and public confidence in, knowledge of, and engagement with KCM's commitment to ensuring safety.

- Safety Communication

- Competencies and Training

These four components are the means of achieving the highest level of safety for KCM's customers, employees, contractors, emergency responders, and the general public. SMS is a comprehensive, collaborative approach that brings management and labor together to build on KCM's existing safety foundation. The system has been designed to control risk, detect, and correct safety problems earlier, share and analyze safety data more effectively, and measure safety performance more carefully. SMS is about applying resources to risk. It's based on ensuring that KCM has the organizational infrastructure to best support decision-making—and the assignment of resources— at all levels.

King County Metro receives the following FTA funding types:

- Section 5307 Urbanized Area Formula Program
- Section 5307 Passenger Ferry Grant Program
- Section 5339 Bus and Bus Facilities
- Section 5337 High-Intensity Fixed Guideway
- Section 5337 High-Intensity Motor Bus
- Section 5309 Fixed Guideway Modernization
- Section 5309 New Starts
- Section 5310 Enhanced Mobility for Seniors and People with Disabilities
- Section 5312 Low and No Emission

SMS IMPLEMENTATION STRATEGY

In alignment with the Federal Transit Administration (FTA)'s SMS regulations, KCM will implement its SMS to include Safety Management Policy, Safety Risk Management, Safety Assurance, and Safety Promotion.

Once completed, each of the four components involves concrete tasks and activities that will signify that the objectives of that SMS implementation have been achieved. Below are tasks and activities to be completed in each phase of SMS implementation.

Component 1: Safety Policy

Tasks to be completed for Safety Policy include:

- Create a process to update and sign the safety policy [COMPLETE]
- Create a Public Transportation Agency Safety Plan Review Committee with Labor partners – in future reviews this will be the Bipartisan Infrastructure Law (BIL) Committee [COMPLETE]
- Create an SMS Liaison role for SMS implementation support for each division [COMPLETE]
- Conduct a review of existing safety programs at KCM compared to new federal and state regulations
- Conduct a gap analysis to determine activities necessary to implement SMS successfully
- Ensure the KCM Public Transportation Agency Safety Plan meets regulatory requirements under federal regulations
- Establish a system that tracks and documents all tasks from Safety Assurance
- Establish a system that tracks and documents all tasks from Safety Risk Management
- Create a policy on making updates to the Public Transportation Agency Safety Plan
- Create a web-based platform to house and share SMS documentation

Component 2: Safety Risk Management

Tasks to be completed for Safety Risk Management include:

- Identify SMS accountabilities of KCM management [COMPLETE]
- Improve criteria and guidance for hazard identification/analysis tools and activities [COMPLETE]
- Finalize the Safety Risk Management Policy [COMPLETE]

Component 3: Safety Assurance

Tasks to be completed for Safety Assurance include:

- Identify Safety Assurance inputs
- Create a report processing program [COMPLETE]
- Review and enhance the process to ensure that no service delivery operations are initiated before changes have been evaluated for safety impact
- Develop Corrective Action Plan documentation to capture all corrective actions from Safety Assurance [COMPLETE]
- Develop and execute training on Safety Assurance Corrective Action Plans
- Develop a strategy to compile, analyze and find trends in data coming from the

system [COMPLETE]
- Determine how to review and track the trends at a division level (safety meeting structure)
- Develop a process to identify Safety Risk Management triggers and Corrective Action Plans at the division level [COMPLETE]
- Determine how the information will be disseminated from the divisions to accountable executive and senior leaders
- Refine safety performance indicators and targets for continuous improvement [COMPLETE]

Component 4: Safety Promotion

Tasks to be completed for Safety Promotion include:

- Create, deliver, and document Initial SMS Basic Training
- Create, deliver, and document training for people accepting risk
- Create, deliver, and document training for people performing risk assessments
- Create a process for housing all SMS records in a Learning Management System [COMPLETE]
- Develop the infrastructure for safety performance communication throughout KCM
- Establish an SMS Steering Committee and SMS Transition Team for the implementation of SMS
- Promote the employee safety reporting program to frontline employees
- Set up communication platforms for the successful distribution of Safety Risk Management processes from division leaders to frontline staff
- Measure employee perceptions of safety and culture at KCM, communicate the results, and take actions related to safety culture improvement

SECTION I: SAFETY POLICY

1 Safety Policy

The KCM safety policy statement is memorialized in King County Department Policies and Procedures. Specifically, the Safety Policy documents KCM's commitments in section IV of that document as follows.

KCM is committed to the following:

A) Support the management of safety through the provision of appropriate resources that will result in an organizational culture that fosters safe practices, encourages effective employee safety reporting and communication, and actively manages safety with the same attention as given to other management systems of the organization.
B) Integrate the management of safety among the primary responsibilities and accountabilities of all managers and employees.
C) Clearly define, for all managers, supervisors, and employees the expectations which they will be accountable for in the delivery and performance management of the organization's safety management systems.
D) Establish and operate hazard identification and analysis and safety risk evaluation activities.
E) Promote an employee safety reporting program as a fundamental source for safety assurance inputs. Ensure that no action will be taken against any employee who discloses a safety concern through the employee safety reporting program, unless disclosure indicates, beyond any reasonable doubt, the employee's direct involvement in an illegal act, gross negligence, or a deliberate or willful disregard of regulations or procedures.
F) Comply with legislative and regulatory requirements.
G) Whenever possible, meet or exceed industry standards and best practices.
H) Ensure that sufficient, skilled, and trained human resources are available to implement SMS.
I) Ensure that all staff are provided with adequate and appropriate safety-related information, training, and equipment; are competent in safe practices; and are allocated tasks commensurate with their skills.
J) Establish and measure Metro Transit's safety performance against realistic and data-driven safety performance indicators and safety performance targets.
K) Continually improve Metro Transit's safety performance through management processes that use data to ensure that appropriate safety management action is taken and is effective.
L) Ensure externally supplied systems and services to support Metro Transit operations are delivered and maintained to meet the organization's safety performance standards.
M) Create processes, practices, and procedures that build a pro-equity organization and workplace culture where all employees feel safe and can thrive.

1.1 Safety Performance Targets

Under MAP-21, the U.S. Department of Transportation (USDOT) and the FTA have established safety performance criteria and state of good repair standards in the National Public Transportation Safety Plan (NPTSP) that all transit agencies must meet, at a minimum. Accordingly, the Public Transportation Agency Safety Plan (PTASP) provides for safety performance objectives that meet or exceed those federal performance criteria and state of good repair standards. The Accountable Executive reviews the Public Transportation Agency Safety Plan (PTASP) annually for approval.

The Public Transportation Agency Safety Plan (PTASP) provides strategic and management performance objectives to affirm and execute its commitment to provide a safe, reliable, and sustainable regional transportation service, and ensures compliance with federal, state, and local regulations and appropriate industry best practices. It establishes collaborative and progressive system safety, oversight, and management processes for modes that KCM operates (including bus, light rail, and streetcar activities) to demonstrate its dedication to safety.

The following describes KCM's overarching goals. The specific targets relative to each goal are provided in the tables following these descriptions.

1.1.1 Safety Performance Measure: Fatalities

KCM fatality rates vary across transportation modes due to distinct operating environments and the inherent safety and risk exposure associated with each. KCM's total number of fatalities (including suicides and trespasser strikes) and rate of fatalities are tracked, and KCM is committed to reducing the number of fatalities across its system to zero. KCM has partnered with several community outreach programs to ensure the goal is met.

1.1.2 Safety Performance Measure: Injuries

Any harm to persons that requires immediate medical attention away from the scene, because of a reportable event, is considered a reportable injury. KCM reports to the National Transit Database (NTD) anytime a person is transported away from the scene for medical attention and reports this event as an injury, whether or not the person appears to be injured.

If an individual seeks medical care several hours after an event or in the days following an event, that individual is not reportable as an injury. A reportable injury requires that the individual receive medical attention at a location other than the location at which the event occurred. This distinction serves to exclude minor first aid or other minor medical assistance received at the scene.

1.1.3 Safety Performance Measure: Safety Events

The safety performance measure captures events that meet NTD reporting thresholds occurring on the KCM system or infrastructure, at a revenue or maintenance facility, during the performance of maintenance activities or involving a transit revenue vehicle. The NTD reporting thresholds include fatalities, injuries requiring immediate medical attention away from the scene, derailment, substantial damage, and evacuation for life safety reasons.

1.1.4 Safety Performance Measure: System Reliability

The system reliability measure expresses the relationship between safety and asset condition. The rate of vehicle failures in service, defined as the mean distance between major mechanical failures, is measured as vehicle revenue miles operated divided by the number of major mechanical failures[1]. KCM continues to invest and plan for a highly reliable, safe operation of its public transportation system. As

[1] Major Mechanical System Failures: Major mechanical system failures prevent a vehicle from completing or starting a scheduled revenue trip because actual movement is limited or because of safety concerns. Examples of major bus failures include breakdowns of brakes, doors, engine cooling systems, steering, axles, and suspension.

KCM introduces new vehicles across all its transportation modes, it is anticipated that there may be a burn-in period for the vehicles, resulting in a decrease in reliability. As such, KCM will strive to maintain current system reliability targets during this period.

1.2 Annual Safety Performance Report and Coordination with Stakeholders

KCM distributes and makes available safety performance targets to regulatory authorities, the Puget Sound Regional Council, and other stakeholders to aid in the planning process. KCM coordinates safety performance targets with stakeholders to the maximum extent possible, to assist with the selection of safety performance targets.

1.3 Safety Performance Targets

In keeping with SMS philosophy, each division/functional area has established Safety Performance Targets (SPT) for its safety-critical functions. These are detailed in divisional and functional area annual safety goals and performance measures documentation. Safety Performance Targets are established in coordination with the Puget Sound Regional Council per the requirements of 49 CFR 673.15(a). The Safety Performance Targets are listed in the tables below.

1.3.1 Fixed Route Bus

Note: Sound Transit is the owner of ST Express routes, and KCM is the contract operator. Safety performance targets for owner agencies are maintained within their own Public Transportation Agency Safety Plan.

Table 1.1 Safety performance targets, fixed route bus: fatalities

Fatalities	Total Number of Fatalities	Fatality Rate by Vehicle Revenue Miles
Baseline data source	NTD – 5-year baseline	NTD – 5-year baseline
Target-setting methodology	Aspirational	Aspirational
Time period	3-year rolling average	3-year rolling average
Denominator	Total events	Per million miles
Goal	0	0

Note: NTD = National Transit Database

Table 1.2 Safety performance targets, fixed route bus: injuries

Injuries	Total Number of Injuries	Injury Rate by Vehicle Revenue Miles
Baseline data source	NTD – 5-year baseline	NTD– 5-year baseline
Target-setting methodology	Percentage	Percentage
Time period	3-year rolling average	3-year rolling average
Denominator	Total events	Per million miles
Goal	5% reduction: 133	5% reduction: 3.88

Note: NTD = National Transit Database

Table 1.3 Safety performance targets, fixed route bus: safety events

Safety Events	Total Number of Safety Events	Safety Event Rate by Vehicle Revenue Miles
Baseline data source	NTD – 5-year baseline	NTD – 5-year baseline
Target-setting methodology	Percentage	Percentage
Time period	3-year rolling average	3-year rolling average
Denominator	N/A	Per million miles
Goal	5% reduction: 192	5% reduction: 5.58

Note: NTD = National Transit Database

Table 1.4 Safety performance targets, fixed route bus: average distance between major mechanical failures

Average Distance Between Major Mechanical Failures	
Baseline Data Source	NTD-VM – 5-year baseline
Target-setting methodology	FTA guidelines (according to Metro's Vehicle Maintenance Data Management Group)
Time period	3-year rolling average
Denominator	Miles
Goal	>6000 miles between trouble calls

Note: NTD-VM = National Transit Database – Vehicle Maintenance

1.3.2 Non-Fixed Route Bus

Table 1.5 Safety performance targets, non-fixed route bus: fatalities

Fatalities	Total Number of Fatalities	Fatality Rate by Vehicle Revenue Miles
Baseline data source	NTD – 5-year baseline	NTD – 5-year baseline
Target-setting methodology	Aspirational	Aspirational
Time period	3-year rolling average	3-year rolling average
Denominator	N/A	Per million miles
Goal	0	0

Note: NTD = National Transit Database

Table 1.6 Safety performance targets, non-fixed route bus: injuries

Injuries	Total Number of Injuries	Injury Rate by Vehicle Revenue Miles
Baseline data source	NTD – 5-year baseline	NTD – 5-year baseline
Target-setting methodology	Aspirational	Aspirational
Time period	3-year rolling average	3-year rolling average
Denominator	N/A	Per million miles
Goal	0	0

Note: NTD = National Transit Database

Table 1.7 Safety performance targets, non-fixed route bus: safety events

Safety Events	Total Number of Safety Events	Safety Event Rate by Vehicle Revenue Miles
Baseline data source	NTD – 5-year baseline	NTD – 5-year baseline
Target-setting methodology	Aspirational	Aspirational
Time period	3-year rolling average	3-year rolling average
Denominator	N/A	Per million miles
Goal	0	0

Note: NTD = National Transit Database

Table 1.8 Safety performance targets, non-fixed route bus: average distance between major mechanical failures

Average Distance Between Major Mechanical Failures	
Baseline data source	Access Data Management
Target-setting methodology	Percentage
Time Period	3-year rolling average
Denominator	Breakdowns per 100,000
Goal	<1

1.3.3 Light Rail Transit

Sound Transit is the owner of Link Light Rail, and KCM is the contract operator. Safety performance targets for owner agencies are maintained within their own Agency Safety Plan.

1.3.4 Streetcar

Seattle Department of Transportation is the owner of Seattle Streetcar, and KCM is the contract operator. Safety performance targets for owner agencies are maintained within their own Agency Safety Plan.

2 Organizational Roles and Responsibilities

2.1 Executive Leadership

2.1.1 King County Council (Board of Directors)

King County is governed by a nine-member elected Council and managed by an elected County Executive. Councilmembers are elected to one of nine geographic council districts and must live in the district they serve. Council members serve four-year terms, and the positions are non-partisan. Each councilmember represents about 240,000 constituents. As the legislative branch of county government, the King County Council sets policies, enacts laws, and adopts budgets that guide an array of services, including those provided by KCM.

2.1.2 General Manager (Accountable Executive)

The KCM General Manager is the Agency's Accountable Executive. The General Manager is responsible for reviewing and approving the Public Transportation Agency Safety Plan, ensuring there is sufficient human and capital resources to develop and maintain it, adopting safety performance objectives, reviewing ongoing safety data reports, reviewing summary reports related to safety events, and overseeing KCM's SMS. The Accountable Executive may delegate risk management decisions to senior management; however, the Accountable Executive is ultimately responsible for accepting or rejecting safety risks, or hazards, at KCM.

Specifically, the KCM General Manager (Accountable Executive) has the responsibility to:

- Review and approve the Public Transportation Agency Safety Plan
- Adopt safety performance objectives, review ongoing safety data reports, and review summary reports related to safety events
- Oversee implementation and administration of Metro Transit's SMS
- Consider safety a top priority when proposing investments and requesting resources from the King County Council
- Advocate for adequate funding for the implementation of safety and security programs and the Safety Management System (SMS)
- Ensure that financial and personnel resources align with agency performance goals, metrics, and values
- Approve and sign Metro Transit policies
- Ensure that safety and health training sufficient to job duties is provided for all employees
- Hold managers and directors accountable for the implementation and administration of SMS within their areas of responsibility
- Foster system-wide accountability at all levels
- Ensure the involvement of safety personnel in long range decision-making processes with system impact such as construction of new facilities; procurement of vehicles, tools, and equipment; strategic planning and operations; and strategy and direction for safety programs and priorities

2.1.3 Deputy General Manager and Chief of Staff

The KCM Deputy General Manager and Chief of Staff have the responsibility to:

- Ensure that the Safety Management System is implemented and executed within their areas of responsibility
- Assume the duties of the General Manager as designated by the General Manager with all the authority and responsibilities to ensure that there are no lapses in the Safety Management System

2.1.4 Assistant General Managers, Division Directors, and Deputy Directors

The KCM Assistant General Managers, Division Directors, and Deputy Directors are responsible to:

- Fully support this program and its proper implementation
- Create a positive safety culture where employees are engaged in safety practices and processes
- Resolve hazards and safety concerns within their purview
- Ensure that SMS is implemented and executed within their area(s) of responsibility
- Ensure that the performance of SMS is measured and documented in all areas
- Ensure that everything needed for employees to perform job duties is communicated to the Accountable Executive and considered in resource requests
- Provide time necessary for employees to receive sufficient training
- Establish accountability and corrective actions

2.2 Leadership

2.2.1 Directors, Section Managers, Managers, and Immediate Supervisors

KCM Directors, Section Managers, Managers, and Immediate Supervisors are responsible to:

- Ensure that SMS is implemented and executed within their areas of responsibility
- Ensure that performance of SMS is measured and documented in all areas of their responsibility
- Ensure that everything needed for employees to perform job duties is communicated to the Accountable Executive and considered in resource requests
- Provide time necessary for employees to receive sufficient training
- Work on hazard identification analysis, tracking, and mitigation as safety concerns are brought forward
- Provide onsite safety orientation to all new or transferred employees
- Hold and document required safety meetings
- Ensure the maintenance of a safe workplace in conformity with Metro Transit safety programs
- Report safety and security concerns and ideas

2.2.2 Other People Leaders

Other people leaders have the responsibility to:

- Ensure that the Safety Management System is implemented and executed within their areas of responsibility
- Ensure the maintenance of a safe workplace in conformity with Metro safety programs
- Follow safety practices and procedures as necessary to maintain a safe work environment
- Report safety and security concerns and ideas to supervisors and/or safety and security staff

2.3 Frontline Employees

Frontline employees have the responsibility to:

- Understand this policy and their role in safety
- Report all safety concerns
- Follow safety practices and procedures as necessary to maintain a safe work environment and be in conformance with applicable regulations, policies, and training
- Report safety and security concerns and ideas to supervisors or anonymously through data collection systems

2.4 Safety, Security, and Quality Assurance

The mission of the Safety, Security, and Quality Assurance (SSQA) Division is to provide leadership and the highest level of support and customer focus to continuously improve Metro's safety culture and security practices, in order to best protect Metro employees, patrons, and the communities we serve from unintentional and intentional harm.

Security and Emergency Management: Committed to delivering quality security and emergency management services to staff, customers, and the community. Partner with others to provide a safe and secure environment that reduces crime, builds trust, and enhances resiliency throughout the KCM network.

Employee Health and Safety: Serve as subject matter experts to develop and administer compliant safety programs in response to employee workplace hazards through risk-based hazard management (e.g., training, investigations, and inspections).

Operations Safety: Serve as subject matter experts in operations safety and enhance the safety culture at KCM through hazard and accident investigation, data collection, risk analysis, and employee engagement.

Quality Assurance: Serve as subject matter experts in areas of Safety Management Systems, auditing, safety and security data acquisition and analysis, and training. Quality Assurance provides necessary support for KCM to fully stand up its safety and security programs.

2.4.1 Chief Safety Officer - Safety, Security, and Quality Assurance

The General Manager has delegated to the Director of Safety, Security, and Quality Assurance the role of Chief Safety Officer. This includes the authority and responsibility to govern, administer, oversee, and monitor the Public Transportation Agency Safety Plan and resulting safety programs, policies, rules, implementation, and procedures. The Safety, Security, and Quality Assurance Chief Safety Officer reports directly to the General Manager.

The Safety, Security, and Quality Assurance Chief Safety Officer will:

- Ensure that SMS is designed and implemented within the strategic vision and direction of the Accountable Executive and meets all regulatory requirements
- Communicate safety and security information and performance to the General Manager
- Ensure that resource needs are communicated upward within senior leadership and division leadership
- Collaborate with leadership and key SMS personnel to ensure safe work practices
- Interface with federal, state, and local authorities, and with industry professional organizations
- When an immediate and serious safety risk exists, order hazardous conditions corrected to acceptable levels or eliminated altogether
- Order the cessation of unsafe activities or operations that are evaluated as creating immediate and serious safety risks within the system
- Oversee Metro Transit's safety certification activities
- Conduct or direct mandatory internal safety reviews to determine compliance with SMS
- Perform or direct announced or unannounced audits, reviews, inspections, or assessments for the purpose of identifying and eliminating unsafe practices, operations, or conditions not immediately corrected by KCM management

The Safety, Security, and Quality Assurance Chief Safety Officer has several direct reports, including members of the Safety, Security, and Quality Assurance Senior Leadership Team (SSQASLT).

2.4.2 Metro Transit Safety

The purpose of Metro Transit Safety is the administration of KCM's operational and employee safety programs: ensuring that the programs are appropriate, compliant with applicable regulations, properly implemented, and that agency staff are trained in the program. Metro Transit Safety is also responsible for incident investigations, hazard management, ergonomics, and wellness. Metro Transit Safety leadership is empowered to order the cessation of unsafe activities or operations that create immediate and serious safety risks.

Metro Transit Safety will:

- Develop, implement, and administer safety programs
- Provide guidance to agency staff in working to achieve safety performance objectives
- Perform announced or unannounced audits, reviews, inspections, or assessments for the purpose of identifying and eliminating unsafe practices, operations, or conditions not immediately corrected by Metro Transit
- Ensure training to this policy is consistent across the organization
- Review and monitor the effectiveness of SMS

2.4.3 Metro Transit Security

The purpose of Metro Transit Security is to deliver quality security and emergency management services to KCM, customers, and the community. Through partnerships, Transit Security works to reduce crime, build trust, and enhance KCM's resiliency. Transit Security is responsible for fare enforcement, security monitoring and panic stations, campus patrols, physical security, onboard camera system, fixed structure camera system and access controls, workplace violence/transit worker assaults, sensitive security information, security training, and threat and vulnerability assessment and mitigation.

2.4.4 Metro Transit Quality Assurance

The purpose of Quality Assurance is to administer the Safety and Security Data Management Program (SSDMP). This is done by building the reporting and analytics practice through integrating safety and security data into business intelligence and critical decision-making processes, and applying data mining, quantitative analysis, and statistics to aid KCM in its decision-making. Quality Assurance is also responsible for the KCM safety and security audit program, agency safety and security training, the Transit Safety and Security Academy (TSSA), and SMS implementation. Administration of the KCM PTASP is provided within KCM by the Safety, Security, and Quality Assurance Chief Safety Officer through the Quality Assurance work group.

2.5 Agency Leadership Teams

Effective implementation of SMS requires senior management's commitment to safety. At KCM, employees may access agency leadership by elevating issues through their work unit as directed by their managers/directors. As appropriate, division directors will elevate issues beyond their division through the Chief of Staff for Metro Leadership Team discussion.

2.5.1 Metro Leadership Team

The Metro Leadership Team's (MLT) focus is maximizing Metro's capacity and capability to achieve Metro's long-term strategic and operational goals in alignment with Metro's vision/mission. It is a decision-making body and working forum to:

1. Establish parameters for and develop biennial department budget
2. Align goals, objectives, and expectations to achieve Metro's vision/mission
3. Develop and manage enterprise-wide initiatives and operational policies
4. Address internal/external obstacles to vision/mission, including legal, resource, political, and reputational
5. Identify operational/organizational challenges (financial, labor, performance, structural, cultural), opportunities, and patterns; and determine solutions and resolutions through shared decision-making (informed by MBR)
6. Grow, model, and cascade leadership competencies
7. Make decisions on recommendations from cross-functional teams
8. Represent, communicate, and implement decisions within divisions

MLT decisions allow successful deployment of Metro's long-term strategic and operational goals, including:

1. Biennial budget planning
2. Cross-functional decisions with operational impacts
3. Decisions that impact organizational efficiencies and functioning
4. Service-level planning and delivery
5. Operational capacity planning and delivery
6. Enterprise service-level planning and delivery
7. Enterprise initiatives
8. Future of Work
9. Business Transformation

The MLT is owned by the General Manager and facilitated by the Chief of Staff. The frequency of these meetings is twice weekly. Members of the MLT include:

- General Manager
- Deputy General Manager
- Chief of Staff
- Assistant General Manager for Employee Services
- Assistant General Manager for Finance and Administration
- Assistant General Manager for Strategy and Partnerships
- General Counsel
- Safety, Security and Quality Assurance Director/Chief Safety Officer
- Capital Division Director
- Mobility Division Director
- Bus Operations Division Director
- Marine Division Director
- Rail Division Director
- Transit Facilities Division Director

- Vehicle Maintenance Division Director

2.5.2 Deputy General Manager's Forum

The Deputy General Manager's (DGM) Forum is a space for operational leaders to coordinate current and emerging issues. It is a working forum to daylight and discuss:

- Current operational issues that may impact near term service delivery
- Employee and labor issues
- Items that may need additional clarity from communications or employee services

DGM is a forum to address current constraints and challenges from an operating perspective and help bring voice to future MLT discussions. The Deputy General Manager's Forum is owned by the Deputy General Manager and facilitated by the Safety, Security, and Quality Assurance Chief Safety Officer. The group meets weekly. Members of the Deputy General Manager's Forum include:

- Deputy General Manager
- Safety, Security, and Quality Assurance Director/Chief Safety Officer
- Capital Division Director
- Mobility Division Director
- Bus Operations Division Director
- Marine Division Director
- Rail Division Director
- Transit Facilities Division Director
- Vehicle Maintenance Division Director

2.5.3 Monthly Business Review

The focus of the Monthly Business Review (MBR) is to monitor progress on Metro's long-term goals and desired outcomes. It is a working forum to:

- Review metrics, gauge progress, validate performance, measure proximity to targets, and reveal where actions can improve
- Identify performance issues and elevate them for resolution at MLT
- Make recommendations to address organizational performance challenges

The MBR is owned by the Assistant General Manager for Finance and Administration and facilitated by the Business Intelligence Team. The group meets monthly. Members of the MBR include:

- Metro Leadership Team members
- Deputy Directors
- Section Managers
- Superintendents

2.5.4 Extended Management Group

The Extended Management Group (EMG) is a forum to develop shared leadership experiences through:

- Training or facilitated conversations pertaining to information, skills, and resources
- Announcements of critical policy changes and new procedures
- Discussion of successes, challenges, and needs

The EMG is not a decision-making body. It is a forum for sharing organizational information that should be cascaded down into attendees' respective work groups. The EMG is owned by the Assistant General Manager for Employee Services and facilitated by the EMG Design Team. The frequency of these meetings is monthly with an expanded quarterly meeting. Members of the EMG include:

- MLT members
- Deputy Directors
- Section Managers
- EEO Officer
- EMG Design Team (volunteer group of representatives)

2.5.5 Division Leadership Teams

Division Leadership Teams focus on maximizing divisional capacity and capability. These teams manage divisional performance by implementing decisions with allocated resources. Division Leadership Teams:

1. Inform and address operational and cultural issues within their own divisions
2. Establish divisional priorities in alignment with departmental goals and objectives
3. Discuss and develop recommendations to be elevated
4. Consult with and problem-solve management issues

Division Leadership Team decisions are focused on the deployment and management of resources and implementation of established strategies/priorities. The Division Leadership Teams are owned by the Division Directors and facilitated by designees. The frequency of these meetings varies by division. Members of the Division Leadership Teams include Division Leadership.

2.5.6 Public Transportation Agency Safety Plan Review Committee

King County Metro Transit and its labor partners are mutually committed to providing a safe workplace and increasing employee engagement on safety and security matters. The Public Transportation Agency Safety Plan Review Committee is a joint effort to review Metro Transit's PTASP in advance of formal adoption by the King County Council. In future reviews this committee will become the Bipartisan Infrastructure Law (BIL) Committee.

The Metro Transit Public Transportation Agency Safety Plan Review Committee provides a structure which facilitates transparent decision-making, communication, and collaboration between Metro and its labor partners while meeting the requirements of the FTA under the Bipartisan Infrastructure Law.

Specifically, this committee is responsible for:

- Ensuring that all members are adequately trained in Safety Management Systems
- Ensuring that the Metro Transit Agency Safety Plan is making sufficient progress toward compliance with the requirements of 49 U.S. Code § 5329, chiefly that it reflects the specific

safety objectives, standards, and priorities of the transit agency, and incorporates SMS principles and methods tailored to the size, complexity, and scope of the system

- Approving the Metro Transit Safety Plan

3 Integration with Public Safety and Emergency Management

KCM develops, maintains, and implements all security and emergency management documentation as required by 49 CFR 673.11(a)(6), hereby incorporated by reference as recommended by the FTA. Security and Emergency Management functions are subject to the requirements of Safety Risk Management, the same as all other safety-critical functions at the agency. Documentation of hazard and risk assessments (threat and vulnerability assessments) is maintained by the Safety, Security, and Quality Assurance Director. Corrective action arising out of security and emergency management functions, including After Action Reports, is the responsibility of the Superintendent of Security in coordination with the other areas and departments.

The following section describes the process used to develop an approved and coordinated schedule for Emergency Management program activities, which includes meetings with external agencies; emergency planning responsibilities and requirements; the process used to evaluate emergency preparedness such as annual emergency field exercises, after action reports and implementation of findings; revision and distribution of emergency response procedures; familiarization training for public safety organizations; and employee emergency management training.

3.1 Security and Emergency Management Programs and Plans

The purpose of Emergency Management is to ensure that KCM systems, including employees, facilities, passengers, and operations personnel, as well as local emergency responders, planning organizations, and mutual aid partners within service area communities, can respond to and recover from any emergency incident or disaster. Through effective safety management, Emergency Management assists in the implementation of KCM safety commitments by using the industry's best practices and federal standards to:

- Establish a formal process of verifying compliance with emergency management requirements
- Ensure collaboration with external agencies in the preparation of emergency responses
- Establish emergency management responsibilities and ensure tasks and activities are documented, understood, and can be executed effectively by the applicable parties, including external agencies, employees, and contractors
- Establish communication protocols, backup communication systems, and maintenance of records
- Establish a formal process of evaluating the effectiveness of emergency response procedures, including any revisions
- Ensure that system-wide accessibility and functional-needs considerations are addressed during emergencies

Emergency Management provides a comprehensive framework to ensure KCM employees, facilities, and equipment, as well as emergency responders, planning organizations, and mutual aid partners, can collaborate on response and recovery efforts during any incident. The effective application of safety management principles to the emergency management process further supports the coordination and integration of programs that are necessary to build, sustain, and improve all interagency activities before, during, and after an emergency.

The Safety, Security, and Quality Assurance Director, in conjunction with the Superintendent of Security and the Superintendent of Safety, are jointly responsible for emergency planning, training and drills, and

for coordinating the Public Transportation Agency Safety Plan with the System Security and Emergency Preparedness Plan (SSEPP) and other related plans. The Superintendent of Safety reviews and coordinates planning, training, and drills with the Superintendent of Security. The following agency-wide programs and plans have been put in place to manage the public safety and emergency management functions.

- Emergency Management Program
- Security and Emergency Preparedness Plan
- Emergency Operations Plan
- Emergency Exercise Program
- Inclement Weather Program

3.1.1 National Incident Management System

KCM uses and trains to the National Incident Management System (NIMS) for emergency response. Supervisors and technicians are trained in NIMS Introduction, Introduction to Incident Command System (ICS), ICS for Single Resources and Initial Action Incidents, ICS 100, ICS 200, and NIMS 700. Managers and supervisors may receive additional training in ICS 300 and ICS 400.

3.1.2 Continuity of Operations

Emergency plans include operating procedures to manage Continuity of Operations scaled to the level of emergency. KCM's goal is to continue operations in the event of a major emergency or significant disaster, and, as able, to provide transportation for emergency operations in coordination with the Seattle and King County Emergency Operations Centers.

3.1.3 Coordination with City/County and Responder Familiarization

KCM regularly coordinates with local and county jurisdictions for training, emergency planning, and familiarization. Fire and police department familiarization is conducted as needed by personnel from the Security and Emergency Management group prior to the annual drill. Familiarization includes the identification of all elements of the system that may impact response or the safety of responders, operators, or the public.

3.2 Emergency Procedures

While KCM has taken every precaution to avoid emergency events and situations, it is inevitable that incidents/accidents will occur.

Emergencies and disasters, as well as system failure recovery operations, are handled by the Transit Control Center (TCC) and Link Control Center (LCC) under Metro's Continuity of Operations Plan and other written/verbal instructions issued by the Division Directors. The Security and Emergency Management group collaborates with local emergency responders and coordinates hands-on training with KCM equipment. Additionally, local responders are invited to participate in the development of drills and other events.

Emergency procedures are reviewed annually by the Manager of Security and Emergency Management, the Safety, Security, and Quality Assurance Chief Safety Officer, and division directors and updated as

needed. Procedure revisions and updates are incorporated into evacuation procedures and Standard Operating Procedures (SOPs) are developed for sign-off and distribution.

3.3 Drills and Exercises

KCM performs a minimum of one tabletop and/or one field exercise emergency drill per year. The Safety, Security, and Quality Assurance Director, or designee, will coordinate drills and exercises with the Director of Bus Operations Division, the Director of Vehicle Maintenance Division, the Director of Rail Division, the Mobility Division Director, and the Marine Division Director. Documentation of drills is maintained for seven years. Drill critiques are held after each drill or actual emergency event. Documentation of the event or exercise is recorded in the After-Action Report, which includes recommendations for improvement.

3.3.1 After Action Reports

A report detailing the events that occurred during the event or exercise, and observations and findings requiring action, is prepared by the Superintendent of Security and Emergency Management (or a designee) and presented to Executive Management within thirty days. Implementation of findings is required and is the responsibility of the division directors with review and tracking by the Safety, Security, and Quality Assurance Director through the Corrective Action Plan (CAP) process. Changes to procedures shall follow standard agency processes for alteration, review, and approval. Action items pertaining to outside agencies are forwarded to the appropriate contact for their consideration. The division directors are responsible for ensuring recommendations are implemented or explaining the alternate practice.

4 Safety Management System Documentation and Records

The Public Transportation Agency Safety Plan is a controlled document managed by the Safety, Security, and Quality Assurance Chief Safety Officer in accordance with the KCM document control protocol. Per the requirements of 49 CFR 673.31, KCM maintains critical files, important records, and other information as dictated by regulatory compliance and good operating practice. These files are maintained using hard copy and/or electronic files. All records are maintained in structured systems that provide legibility, original dates, revision dates, and easy retrieval. KCM is required to maintain all versions of documents related to this Agency Safety Plan, including those associated with the implementation of the SMS, and results from SMS processes and activities, for a minimum of three years after they are created.

KCM acknowledges that not all divisions and functional areas have yet developed full documentation to support the requirements of the Public Transportation Agency Safety Plan; however, per FTA guidance, each division and functional area is creating a document inventory, identifying all documentation needing development or revision to conform to the Public Transportation Agency Safety Plan, as well as developing a corrective action plan to close the document gaps.

4.1 Agency Plans and Programs

Agency plans lay out an objective and vision, while programs contain specific steps. Both plans and programs may be applied agency wide.

4.1.1 Public Transportation Agency Safety Plan (PTASP)

The Public Transportation Agency Safety Plan is considered a living document in that it is continually edited and updated. Updates to the PTASP reflect changes to operating or maintenance procedures, policies, rules, and/or the operating environment; they may also be made in response to regulatory requirements, audit findings, investigations, or other reviews. The PTASP annual review and update process ensures that executive management has reviewed and approved the Public Transportation Agency Safety Plan before any changes are submitted to internal and/or external stakeholders.

The PTASP is reviewed on an annual basis (once per year) as required by regulation. When a revision is required, the Safety, Security, and Quality Assurance Chief Safety Officer is responsible for initiating, developing, and revising the PTASP on behalf of KCM. Review of the PTASP is conducted with the division directors in each affected functional areas and safety. The final draft, including all changes, is approved by the General Manager via the Policy Statement and Authority signature found in section 1 of the PTASP.

The PTASP must be revised when a system expansion or major project affects the system, such as a new station or transit center, additional routes, or rail lines, new or expanded operations and maintenance facilities, or significant system-wide equipment modifications or replacement. The revised PTASP should be submitted to the Washington State Department of Transportation (WSDOT) Program Manager or other regulatory authority as required at least 180 days prior to when the system expansion or major project goes online, including before the opening of a new transit center or station or additional route or rail line begins passenger service, and before construction or testing is completed.

The revised Public Transportation Agency Safety Plan, or letter certifying that the Public Transportation Agency Safety Plan does not require revision, is submitted to the FTA, or other regulatory authority as required, annually on or before March 1, or 180 days prior to system expansion or major project completion. The FTA must formally accept or provide comments on the Public Transportation Agency Safety Plan in writing. If the submittal requires revisions based on FTA comments, the revised plan must be submitted within 60 calendar days of notification.

The Public Transportation Agency Safety Plan will be delivered to the FTA in electronic format via email. Once the Agency Safety Plan has been approved by the FTA, KCM will distribute the plan to stakeholders using methods established in the Safety Communication Policy.

4.1.2 Transit Asset Management Plan

The KCM Transit Asset Management Plan (TAMP) describes the capital asset inventory; condition of inventoried assets; TAMP performance measures, targets, and prioritization of investments aligned with the agency's TAMP and State of Good Repair (SoGR) policy, strategic goals, and objectives; as well as the strategies, activities, and resources required for delivering the plan (including decision support tools and processes); and other agency-wide approaches to continually improve TAMP practices.

SECTION II: SAFETY RISK MANAGEMENT

5 Hazard Management

A hazard is any real or potential condition that can cause injury, illness, or death; damage to, or loss of, facilities, equipment, rolling stock, or infrastructure; or damage to the environment. A real condition is one that currently exists on the system; a potential condition is one that does not currently exist on the system but could be introduced if infrastructure or operational changes are made.

Safety Risk Management (SRM) provides a decision-making process for identifying hazards and mitigating risk based on a thorough understanding of the organization's systems and operating environment. Part of the decision-making process includes management accepting risk in the operation when it is assessed to be at an acceptable level. By performing SRM, an organization is fulfilling its commitment to consider risk in its operation and to reduce it to an acceptable level. The SRM process is a way to integrate acceptable risk into processes, products, and services or to improve controls that are not effective. By using SRM, an agency can work toward allocating resources to minimize hazardous conditions and maximize the safety of the system. This is achieved through the following steps:

- Identification and analysis of a hazard
- Evaluation of the level of risk introduced by the hazard
- Resolution or reduction of hazards to an acceptable risk level through mitigation(s)
- Tracking the effectiveness of mitigation(s)

SRM policy defines the tools and techniques used, as well as the responsibilities of employees, in identifying, analyzing, and reporting safety hazards. Following the identification of a hazard, it must be assessed to determine the level of risk to the system. The SRM policy defines the level of risk that is considered acceptable to the agency; hazards exceeding that level of risk (the most serious hazards) must be mitigated to an acceptable level. SRM policy describes the methods of controlling hazards to mitigate a hazard to an acceptable level. Finally, SRM policy describes the processes for tracking hazards (once the hazards have been mitigated and/or accepted) to ensure that any mitigations effectively controlled the hazard and did not create any unintended hazardous conditions.

SRM processes should be continually applied to manage hazards throughout the life cycle of a system. Hazards should be identified prior to system configuration changes and eliminated through design (whenever possible) to prevent the introduction of hazards into the system. SRM processes provide a crucial tool for determining the safety impacts of engineering change proposals, construction change orders, operational changes, and the issuance of temporary permits and certificates. Additionally, ongoing operations must be continually monitored to identify and control operational risks.

5.1 Data Sources

Hazard identification is used to identify and analyze hazardous conditions on the system and the methods by which identified hazards are formally reported. This section describes the processes employed to proactively search for hazardous conditions on the system.

KCM uses several internal and external methods for KCM employees, contractors, and the public to report hazardous conditions. They include:

- Employee safety committees
- Direct employee hazard reporting in the Safety and Security Management (SSaM) system
- Operator Service and Facilities Reports (OSFR)
- Safety analysis (conducted by KCM Safety)
- Testing, inspection, and audits
- Safety rules compliance monitoring
- Safety event (accidents, incidents, and near misses) investigations
- Customer reports
- Washington State Department of Labor and Industries (L&I), Division of Occupational Safety and Health (DOSH) directives, narratives, reports, and hazard alerts
- State Safety Oversight Agency (SSOA), Federal Transit Administration, and National Transportation Safety Board advisories (NTSB)

5.2 Hazard Analysis

Hazard analyses used for hazard identification and assessment encompass all areas within the KCM operating system. They include:

- Existing elements of the system, continually reviewed as part of ongoing safety risk management processes
- Safety analyses conducted by consultants and contractors on new construction or procurement programs
- Proposed engineering changes
- Vehicles, infrastructure, equipment, and subsystems
- Operating and maintenance rules and procedures, including normal, abnormal, and emergency rules and procedures
- Aggregated safety event (accidents, incidents, and near misses) data
- Safety data sources
- Hazards identified on similar transit systems

6 Safety Risk Assessment

A safety risk assessment is required to establish priorities for corrective action and resolution of identified hazards. For each identified hazard, all potential consequences that could occur while operating with the exposed hazardous condition need to be defined. The consequences or outcomes will fall into one of the severity categories:

- Injury/Death
- Damage
- Environmental Damage

Safety risk assessments need to be based on a thorough understanding of the system, which is why the system description is an essential step of the SRM process. Without a proper system description, important details that could cause the system to break down may be overlooked.

A semi-quantitative risk model will be used to perform risk assessments within the agency. A semi-quantitative risk model uses qualitative data to express risk values. Data from KCM or other similar public transportation agencies should be used (accident statistics, failure data, error data, etc.) to determine the safety risk. When data is not available, expertise and SME judgment will be used. When the best estimate for safety risk must be based on reasonable expert judgment, effective risk management can be accomplished by having the Hazard Assessment Report facilitator conduct a disciplined analysis (see Section 9.1).

6.1 Likelihood

The likelihood that a hazard will occur during the planned life expectancy can be described in potential occurrences per unit of time, events, population, terms, or activity. Likelihood components may be determined by using qualitative or quantitative analysis.

Qualitative analysis is a more subjective approach and relies more heavily on personal experience and understanding of the system. It is a less time-intensive method and does not require as much technical expertise. Therefore, qualitative analysis may be preferable when analyzing simple systems with few inter-dependencies. A qualitative hazard likelihood may be derived from research, analysis, and evaluation of historical safety data from similar systems.

Quantitative analysis is a more objective approach, which is a more time-intensive method that requires more technical expertise. Quantitative analysis is well suited for complex systems with numerous interdependencies and where large data sets are available.

The likelihood assessments shall consider the actual size of the fleet inventory, or take items in the specific system under consideration, based on the current system configuration. Additionally, the frequency of human-induced fault conditions shall be estimated based on systematic review of task and procedure complexity, human-machine interfaces, employee proficiency, and historical data of human-induced error-rates in similar operations (e.g., 1/1000 errors per transaction, for given tasks).

Once a likelihood description level is determined for the hazard’s consequence, the corresponding likelihood score will be used to calculate the safety risk.

Table 6.1 Likelihood of a consequence

Likelihood Levels				
Description Level	**Specific Individual Item**	**Fleet or Inventory Mean Time Between Events (MTBE)**	**Specific Individual Item (with Rate)**	**Likelihood Score**
Frequent	Likely to occur often in the life of an item	Continuously experienced MTBE less than 10^3 operating hours	Likely to occur often in the life of an item. Probability of occurrence greater than or equal to 10^{-3}	10
Probable	Will occur several times in the life of an item	Will occur frequently. MTBE greater than or equal to 10^3 operating hours and less than 10^5	Will occur several times in the life of an item. Probability of occurrence less than 10^{-3} but greater than or equal to 10^{-5}	5
Occasional	Likely to occur sometime in the life of an item	Will occur several times. MTBE greater than or equal to 10^5 operating hours and less than 10^6 operating hours	Likely to occur sometime in the life of an item. Probability of occurrence less than 10^{-5} but greater than or equal to 10^{-6}	3
Remote	Unlikely, but possible to occur in the life of an item	Unlikely, but can reasonably be expected to occur. MTBE greater than or equal to 10^6 operating hours and less than 10^8 operating hours	Unlikely, but possible to occur in the life of an item. Probability of occurrence less than 10^{-6} but greater than or equal to 10^{-8}	2
Improbable	So unlikely, it can be assumed occurrence may not be experienced in the life of an item	Unlikely to occur, but possible. MTBE greater than 10^8 operating hours	So unlikely, it can be assumed occurrence may not be experienced in the life of an item. Probability of occurrence less than 10^{-8}	1

6.2 Severity

Consequence severity is defined as the qualitative measure of the outcomes resulting from a hazardous condition. The appropriate severity category will be determined by matching the definition of the categories with the potential and actual outcomes. After determining the severity description level, the corresponding severity score will be used to determine the final risk rating.

Table 6.2 Severity of a consequence

Severity Levels				
Description	**Severity Categories**			**Severity Score**
	Injury	**Damage**	**Environment**	
Catastrophic	Loss of life, or the severe injury of more than one person	Total loss of equipment or system, with an estimated monetary loss more than $5,000,000	Massive environmental effect with permanent implications	100
Critical	Severe injury requiring long-term rehabilitation or significant medical intervention	Damage with a monetary loss between >$1,000,000 and $5,000,000	Significant environmental impact with long lasting effects	70
Major	Injuries requiring medical transport or hospital admission	Damage with a monetary loss between >$250,000 and $1,000,000	Major environmental impact lasting months	40
Marginal	Injury requiring first aid only	Damage with monetary loss between >$10,000 and $250,000	Minor environmental damage lasting weeks	10
Negligible	No injury/No first aid required	Damage with monetary loss below $10,000	Less than minor environmental damage	1

6.3 Safety Risk Matrix

Based on the evaluated severity score and likelihood score assigned to each outcome, a corresponding value will be calculated to determine the risk score.

Likelihood Score x Severity Score = Risk Score

The Safety Risk Matrix can be used to determine the risk score and risk level.

Table 6.3 Safety Risk Matrix

	Catastrophic (100)	Critical (70)	Major (40)	Marginal (10)	Negligible (1)
Frequent (10)	**High** 1000	**High** 700	**High** 400	**Medium** 100	**Low** 10
Probable (5)	**High** 500	**High** 350	**Serious** 200	**Medium** 50	**Low** 5
Occasional (3)	**High** 300	**Serious** 210	**Serious** 120	**Medium** 30	**Low** 3
Remote (2)	**Serious** 200	**Serious** 140	**Medium** 80	**Low** 20	**Low** 2
Improbable (1)	**Medium** 100	**Medium** 70	**Medium** 40	**Low** 10	**Low** 1
Eliminated	Eliminated	Eliminated	Eliminated	Eliminated	Eliminated

In addition to the Safety Risk Matrix, Table 6.4 indicates the required actions to take based on the risk level assessed.

Table 6.4 Safety Risk Matrix required action based off risk level

Risk Score	Risk Level	Risk Level Type	Risk Ownership and Sign Off Authority	Mitigation Actions Required	Operation Impact	Monitoring	Management Review
300 and above	**High**	Unacceptable	GM level	Immediately mitigate to Serious Level prior to starting operation	Stop the Operation	90-day monitoring plan required	Safety Review and Hazard Management Working Group reviews and closes out report
120 – 299.9	**Serious**	Unacceptable	Director level or higher in area(s) of risk/change	Mitigation plan needs to begin implementation within 30 days to bring risk to acceptable levels	Operation permitted with the execution of high priority mitigation strategy	90-day monitoring plan required	Safety Review and Hazard Management Working Group reviews and closes out report
21-119.9	**Medium**	Acceptable	Section manager level or higher in area(s) of risk/change	Mitigation recommended	Operation permitted	Monitoring recommended	Hazard Management Working Group reviews and closes out report
.1-20.9	**Low**	Acceptable	Superintendent level or higher in area(s) of risk/change	Mitigation not required	Operation permitted	Monitoring not required	Different facilitator reviews and closes out report
0	Eliminated	Acceptable	N/A	N/A	N/A	N/A	N/A

6.4 Unacceptable Risk Levels

6.4.1 High Risk Level

Hazards with a risk score above 300 are High Risk level and are unacceptable in the operation. If High Risk hazards are identified, any affected operating area must be immediately halted. Prior to starting the operation, actions need to be taken to at least bring the risk level to Serious Risk, then permanently to acceptable levels. Most often, when taking immediate action, short-term mitigations are being implemented and those actions will need to be followed by permanent long-term mitigations. Short-term mitigations may include (but are not limited to) a stop-work order for maintenance or construction tasks, red-tagging or sequestering vehicles or equipment, or a stop to any affected revenue service. All of which needs to be documented in the Hazard Assessment Report.

When high risks are identified during a change, or prior to implementation, rework of the planned change needs to be altered before implementation to ensure risk is at acceptable levels. When there is an initial risk assessment made that meets the High-Risk level, the Hazard Assessment Report needs to be signed off on and risk ownership belongs to the General Manager.

All assessments that indicated an initial High Risk will need to be monitored for at least 90 days after the mitigations are implemented. All High-Risk hazards will need to be reviewed by the Safety, Security, and Quality Assurance Chief Safety Officer or designee, as well as undergo review and closure from the Hazard Management Working Group. High-Risk levels are represented by the color red.

6.4.2 Serious Risk Level

Hazards with a risk score above 120 and below 300 have a Serious Risk level. Serious hazards that are discovered in the operation must have a mitigation strategy in place within 30 days of identifying the hazard. If the mitigation plan takes longer than 30 days to fully implement, short-term mitigations need

to be enacted within that 30-day window to ensure the risk is brought down to satisfactory levels while the permanent long-term mitigation plan is executed. The final mitigation strategy will need to bring Serious Risk level down to an acceptable level. All of which needs to be documented in the Hazard Assessment Report.

When Serious Risks are proactively identified, rework of the planned change needs to be altered to bring the risk to acceptable levels before implementing the change. The Hazard Assessment Report needs to be signed off on, and ownership will belong to the director level or higher in the area of risk.

All hazards with an initial risk level of Serious need a monitoring plan in effect for at least 90 days after mitigation actions are implemented. All Serious hazards will need to be reviewed by the Safety, Security, and Quality Assurance Chief Safety Officer, or designee, as well as undergo review and closure from the Hazard Management Working Group. Serious Risk levels are represented by the color orange.

6.5 Acceptable Risk Levels

6.5.1 Medium Risk Level

Hazards with a risk score greater than 21 and below 120 have a Medium Risk level. Medium hazards may be accepted in an “as-is” condition by a section manager (or higher) in the area of risk. However, whenever reasonably practical, Medium Risk should be mitigated to a Low or Eliminated level to lower the risk. Reactive hazards with a risk level of Medium should be formally accepted within 60 days of identification of the hazard. For all Medium hazards that are proactively identified, acceptance of the Hazard Assessment Report is required prior to implementation.

For all hazards with an initial risk level of Medium, a monitoring plan is recommended, but not required. To maintain quality and effectiveness, in addition to the section manager sign off, the Hazard Management Working Group will review, sign off and close out the report. Medium Risk levels are represented by the color yellow.

6.5.2 Low Risk Level

Hazards with a risk score greater than .1 and below 21 have a Low Risk level. For all reactive Low Risk level hazards, the “as-is” condition can be accepted by a superintendent level (or higher) in the area of risk. The hazard may be eliminated entirely if management decides to mitigate the risk to a lower level. When the initial risk is proactively identified from a change, implementation is permitted but should be signed off prior to closing the Hazard Assessment Report.

Closing out a Hazard Assessment Report with an initial risk level of Low will need to be reviewed and closed out by a qualified facilitator other than the facilitator conducting the Hazard Assessment Report.

6.5.3 Eliminated Risk

Hazards which have been mitigated may be classified as Eliminated, provided that the mitigating measures entirely remove the possibility of the hazardous condition and its occurrence. The initial risk will never be assessed as Eliminated; this is solely reserved for the mitigation risk assessment.

Once a hazard has been identified during the mitigation process, there is the ability to remove the hazard completely. When this occurs, the risk is removed and a risk level of Eliminated will be assigned.

6.6 Hazard Resolution

The method of hazard mitigation to be employed can be determined by conducting a thorough analysis of the system, considering the possible tradeoffs between various alternatives and the system safety requirements. In general accordance with Federal Transit Administration, American Public Transportation Association, and other industry best practices, several different means can be employed to resolve identified hazards. These include design changes, the installation of controls and warning devices, and the implementation of special procedures.

With a semi-quantitative risk model, all controls used to mitigate risk will be assigned a reduction control factor to calculate the predicted residual risk. This allows for the facilitator to have a more quantifiable approach to address how each type of control impacts the hazard. After the controls have been determined for the hazard, each will be assigned a control type with a corresponding multiplier. Then the highest initial risk score is multiplied by each control factor (CF) multiplier. This calculation will result in the mitigated risk score. The mitigated risk score will be used to determine the mitigated risk level of High, Serious, Medium, Low, or Eliminated.

Highest Risk Score x (CF x CF x CF) = Mitigated Risk Score

In order of preference, the means to be used in resolving hazards at King County Metro are:

6.6.1 Elimination

The concept of elimination is simple: remove the hazard so that it is no longer present in the operation. The problem with elimination is that the implementation is not as simple as the definition. Completely eliminating a hazard from the operation is not usually an option. For example, driving on the road is a hazard that a transit organization cannot eliminate, as buses need to operate on the roads. However, if Elimination is available, it is the option that must be chosen.

When the mitigation strategy has a control that eliminates the hazard, the risk level will go to Eliminated, since the reduction factor is 100%, and the control factor multiplier would be 0.

6.6.2 Substitution

Substitution controls are the second most effective method for lowering risk in the operation. Substitution controls may be implemented in the existing process but would be used most effectively during the design stage. Substitution controls replace something that produces the hazard with something that does not produce the hazard or lessens the hazard (i.e., replacing a toxic compound with a less hazardous product). The condition of a toxic compound still exists here, but the risk impact of that compound has been lowered significantly. Whenever substitution controls are used for mitigation, evaluation for substitute risk is required, since new/different hazards could be introduced.

When the mitigation strategy uses substitution controls, there will be an 80% to 90% reduction in risk, which would make the control factor multiplier 0.1-0.2.

6.6.3 Safety Devices (Software and Engineering Controls)

Hazards that cannot be eliminated or controlled through design selection shall be controlled to an acceptable level with fixed, automatic, or other protective safety design features or devices. Examples of

safety devices include protective enclosures, software implementation, and machine guards. Care must be taken to ascertain that the operation of the safety device reduces the loss or risk and does not introduce an additional hazard. Safety devices shall also permit the system to continue to operate in a limited manner. Provisions shall be made for periodic functional checks of safety devices. When introducing safety device controls, substitute risk needs to be assessed.

When the mitigation strategy uses engineering controls, there will be a 50%-70% reduction in risk, with a control factor multiplier of 0.3-0.5.

6.6.4 Administrative (Training, Procedures, Warning, and Awareness Means)

When neither design nor safety devices can effectively eliminate or control an identified hazard, various administrative controls will be used to lower the likelihood of a condition. Warning devices shall be used to detect the condition and generate an adequate warning signal. Warning signals and their application shall be designed to minimize the likelihood of incorrect personnel reaction to the signals and should be standardized within similar systems. When introducing warning device controls, substitute risk needs to be assessed.

In addition to warning devices, procedures and training are administrative controls that can be used to control the hazard. Administrative controls have a reduction factor of 20%-30%, and the control factor multiplier is 0.7-0.8.

6.6.5 Personal Protective Equipment (PPE)

Personal protective equipment (PPE) is the least desirable, and least effective, hazard control. PPE is susceptible to user error or non-compliance and may not effectively protect employees in all circumstances. PPE should only be used when there are no viable alternative measures, or as part of a layered approach to controlling a hazard. Often the use of PPE is required by regulations or specified by the original equipment manufacturer.

When PPE is used to control risk, there will be a 5%-10% reduction in risk, with a control factor multiplier of 0.9-0.95.

Table 7.1 Hierarchy of controls

Hierarchy of Controls				
Control Type	Example	Reduction Factor		Examples
Elimination	• Design a task, step, equipment, material, or tool to be eliminated before it is put into production or use • Eliminate human interaction • Replace/eliminate a reaction step, etc. • Eliminate pinch points (increase clearance)	Severity and Likelihood Reduction 100%	Multiplier 0	• Elimination (e.g., human interaction) may also eliminate exposure
Substitution	• Automated materials handling (robots, conveyors) to greatly reduce human interaction • Replace with a less toxic compound • Greatly reduce speed, noise, weight (energy)	Severity Reduction 90% Substitution with little or no hazard	Multiplier 0.1	• Replace oil with water • Replace lifting 75 lbs. with 5 lbs.
		80% Substitution with something that still has some hazards	Multiplier 0.2	• Replacing flammable with non-combustible • Replacing lifting 75 lbs. with 20 lbs. • Automation: Automate material handling where humans have been removed except for upset conditions.
Safety Devices (Engineering)	• Barriers • Interlocks • Presence sensing devices (light curtains, safety mats) • Fixed machine guards, emergency stops • Pressure relief valves • Nonskid floor coatings, local exhaust ventilation, containerization • Two hand controls • New software, patches, or upgrades	Likelihood Reduction 70% Isolation and guards with interlocks	Multiplier 0.3	• Engineering controls like guards, that also have interlocks
		60% Engineering control redundancy or multiple engineering controls	Multiplier 0.4	• Failsafe modes of operation
		50% Single engineering control	Multiplier 0.5	• Two hand control, light curtains, or physical barrier
Administrative	• Safety work procedures • Safety Inspection • Training • Lights, beacons, and strobes • Computer warnings • Worker's rotation • Alarms (gas meter, fire) • Barrier tape, tags, floor markings • Signs and labels • Beeper, horns, sirens, etc. • Buddy system, attendants, observers, supervision, schedule limits • Lockout-Tagout	Likelihood Reduction Only 40% Engineering control that requires administrative intervention to initiate	Multiplier 0.6	• Lockout-Tagout where a physical device like a lock requires human intervention to initiate
		30% Training, plus warnings, signs, plus inspection/ observations	Multiplier 0.7	• Training, plus inspection to verify that controls are being practiced
		20% Training, warning signs	Multiplier 0.8	• If there is a warning light, operators need to be trained to be aware of what it means
Personal Protective Equipment (PPE)	• Ear plugs, gloves, respirator • Safety glasses, face schedule	Likelihood Reduction Only 10% Multiple PPE	Multiplier 0 .9	• Multiple PPE must be for the same hazard, e.g., gloves and arm guards
		5% Single PPE	Multiplier 0.95	• Must be specific to the hazard

6.7 Mitigation Strategies

6.7.1 Immediate and Long-Term Mitigations

In many cases, implementing a permanent long-term mitigation, or mitigations, may not be immediately possible. In such cases, immediate short-term or express priority mitigations will be developed to reduce the hazard to an acceptable level of risk in the appropriate timeframe for the identified hazard, while a permanent long-term mitigation is developed and implemented.

6.7.2 Layering Mitigations

The risk matrix and the mitigated risk assessment will be applied to the predicted substitute risk which will need to be assessed to acceptable levels. A hazard's predicted residual risk is the level of risk that would be present after the mitigation is fully implemented. The mitigation plan should reduce the likelihood, severity, or both. The predicted substitute risk is the risk that may be introduced to the system after the mitigation strategy has been fully implemented, as mitigations may create new unintended hazardous conditions. After the mitigation plan is documented, additional risk assessments need to be completed for predicted residual/substitute risks persisting in the system.

- **Predicted residual risk** will have mitigated risk assessments – these will be determined using the control factor formula in conjunction with Table 6.4 to categorize the risk score to the corresponding risk level. All mitigations need to bring the risk to acceptable levels.
- **Predicted substitute risk** will use the risk matrix to complete the mitigated risk assessment and will also need to be assessed to acceptable levels.
- **A hazard with predicted residual or substitute risks** that are Unacceptable (High and Serious) cannot be accepted into the system and must be mitigated to a lower level of risk.
- **Hazards that have predicted residual or substitute risk** that are assessed at satisfactory levels will need risk acceptance on the Hazard Assessment Report signed off on prior to implementation of the mitigation plan.

6.8 Hazard Tracking

Resolution of all identified hazards will be monitored by KCM Safety. KCM's data collection system, SSaM, shall be used for tracking the hazard resolution process. The SSaM Hazard Assessment Report will be used to track the identified risks in the system. The Hazard Log or risk register will compile all identified hazards from the Hazard Assessment Report. (Paper copies of the Hazard Assessment Report will be used and stored on SharePoint while the SSaM system is being developed.) The Hazard Assessment Report will be initiated for reactive and proactive SRM triggers.

At a minimum, the Hazard Log will include the following:

- SRM trigger
- Date hazard identified
- Source of identification
- System description
- Policy/procedures potentially affected by hazard
- Environment or facility potentially affected by hazard
- Service or resources potentially affected by hazard

- Equipment potentially affected by hazard
- SRM panel participation log
- Hazard identification with hazard classification
- Initial safety risk level (severity/likelihood)
- Mitigation corrective action plans (elimination or control)
- Responsible party for each proposed action
- Estimated dates of completion
- Predicted residual and substitute risk identified
- Mitigation safety risk level (severity/likelihood)
- Follow up activity (monitor effectiveness, unexpected hazards)
- Hazard Assessment Report signoff
- Status (open or closed)

6.8.1 Hazard Classification System

KCM will classify hazards to identify potential systemic deficiencies contributing to the occurrence of hazardous conditions. The classification system will be based on the Federal Transit Administration Sample Hazard Classification System (Version 1), which classifies hazards into the following categories:

- Organizational
    - Resourcing
    - Procedural
    - Training
    - Supervisory
- Technical
    - Operational
    - Maintenance
    - Design
    - Equipment
- Environmental
    - Weather
    - Natural

6.9 Mitigation Corrective Action Plans

Mitigation corrective action plans shall be developed for all hazards that require or have a mitigation strategy. High and Serious Risk levels require mitigation to acceptable levels, while Medium and Low Risk levels can have a mitigation strategy if it is determined to lower the risk further. The mitigation corrective action plans will be incorporated into the Hazard Assessment Report and accessed through the CAP Log in SSaM.

6.10 Risk Ownership and Sign Off Authority

Once the Hazard Assessment Report (HAR) is completed, and the findings and mitigations are documented, the results need to be delivered to the appropriate management official for sign off and acceptance. The appropriate management official will sign off the risk assessments, mitigation plan, and the complete documented report, thereby accepting the remaining risk in the operation. Sign off is still required for Hazard Assessment Reports without identified hazards, to ensure the change has been

assessed correctly. When an individual accepts safety risk, it does not mean that the safety risk is eliminated. Some safety risk remains; however, the individual has determined that the prediction of the remaining safety risk is acceptable. By accepting risk, the management official is deciding to authorize the operation without additional mitigation other than what is laid out in the hazard report. Hazard assessments and the risks will need to be accepted prior to closing out the report and implementing the mitigation plan or change.

When there is an initial risk assessment made that meets the High-Risk level, the corresponding Hazard Assessment Report needs to be signed off by, and risk ownership belongs to, the General Manager. When there is a Serious Risk level, the Hazard Assessment Report needs to be signed off by, and ownership will belong to, the Director level or higher in the area of risk. For a Medium level risk, the Section Manager owns the risk and signs off. Finally, when there is an initial risk assessment of Low, the Hazard Assessment Report needs to be signed off by a Superintendent level (or higher) in the area of risk, and ownership belongs to the acceptor.

6.11 Monitoring

Hazard monitoring will be conducted to verify that mitigations have adequately controlled the hazards. Hazard monitoring activities will include reviews of safety data that occur during the Safety Assurance process. These reviews can occur at safety committees, safety and security working groups, and the Monthly Business Review (MBR); safety event data will be reviewed to determine if implemented mitigations have reduced safety events.

Hazard monitoring plans will be developed in the Hazard Assessment Report discussion section, and how monitoring will be incorporated into the Safety Assurance process will be determined. Once the type of monitoring is documented (e.g., monitoring employee reports, adding audit steps, performing management observations), the Hazard Assessment Report can be sent over for sign off. Hazard monitoring plans will provide specific requirements for performing follow-up activities to ensure that a given hazard has been adequately mitigated.

6.11.1 Closing Out Hazard Assessment Report

Depending on the elements incorporated into the Hazard Assessment Report, closing the document will occur after implementation and monitoring are complete. If additional information becomes available on the hazard after closure, a new Hazard Assessment Report will be created, and the old hazard report can be referenced. The new Hazard Assessment Report will supersede the previous hazard report in the system.

If a Hazard Assessment Report is created for a system change, and that system change is halted, the Hazard Assessment Report will be marked as “No longer implementing,” and the report will be closed. These reports will remain in the system for reference only.

No Hazard Assessment Reports can be closed out by the Risk Owner after signoff occurs. Hazards with an initial risk of High, Serious, or Medium will be closed out by the Hazard Management Working Group. Hazard Assessment Reports with the initial risk of Low will be closed out by an SRM facilitator who was not involved with the original Hazard Assessment Report.

6.12 Responsibilities

6.12.1 Facilitator

Depending on the issue or change under consideration, a Hazard Assessment Report may be conducted by an individual or team within KCM Safety and Security. Safety and Security may also delegate this authority out to the divisions with Safety and Security's oversight and support. Facilitators will document and lead the discussion, and an adequate SRM panel of representatives should be present to address the scope and complexity of the system. SRM facilitators do not make safety risk acceptance decisions, which is a management function; however, they are responsible for coordinating the SRM panel, communicating the results of the assessment within their organization, and ensuring management sign off and risk acceptance. Facilitators will need to be trained in how to successfully conduct a Hazard Assessment Report through the SRM process.

6.12.2 Risk Owner

The review and approval of SRM documentation and ownership of any safety risk is designed to maintain and assure the quality of the SRM process. Review and approval are also required for Hazard Assessment Reports without identified hazards. The Risk Owner for all "no hazard" Hazard Assessment Reports will be a superintendent or higher in the area of the change. Depending on the hazard and risk level, the Hazard Assessment Report signoff authority will be responsible for reviewing the report and all its elements prior to implementation.

By signing off on the SRM document, the acceptor is confirming the following are understood and accepted:

- The system analysis, hazard identification, and initial risk assessments
- The mitigation plan actions that will be implemented
- The predicted residual and substitute risk(s) associated with the hazard(s) and the mitigation risk assessment(s)
- The monitoring plan associated with the hazard report

Risk Owners are accountable for the following:

- Ensuring that the documented mitigation corrective action plans are complete and implemented
- Ensuring that all monitoring activities are being recorded as specified (when required)
- Ensuring that performance data needed for the monitoring activities is being collected and analyzed according to the monitoring plan
- Determining the need to reconvene an SRM panel if performance data indicates that the mitigation controls are inadequate

6.12.3 Hazard Management Working Group

To ensure quality and compliance, Hazard Assessment Reports will be discussed and reviewed on a periodic basis by the Hazard Management Working Group. This group will also be responsible for signing off all medium level risks and higher. This working group will be made up of functional area-appointed

representatives (SMS Liaisons), the Transit Safety Manager, and the Transit Security Manager. Representation from contract owners will be encouraged but not required.

Ideally, the review process should occur after a Hazard Report has been signed off but before it is implemented. However, when that timeframe is not possible, the review should at least occur prior to a Hazard Report close out.

6.12.4 SMS Liaison

The SMS Liaisons are the SMS advocates for their respective divisions. They are responsible for ensuring all Hazard Assessment Reports assigned to their divisions are signed off and closed out. They will participate in the SRM Panel and/or find the proper individuals to participate.

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SECTION III: SAFETY ASSURANCE

7 Safety Performance Monitoring and Measurement

7.1 Safety Data Acquisition and Analysis

KCM divisions/functional areas are each responsible to identify, collect, and analyze data on their safety critical functions. This information will be used for four purposes:

1. To ensure all divisions/functional areas establish and achieve performance targets related to their daily operations, such as rules and procedure compliance; accuracy of procedures and documentation; safety events; proper management of change; and completion of safety-critical tasks in a timely manner.
2. To ensure that system-wide performance measures are being met through monitoring data in the appropriate division/functional area.
3. To ensure through wide distribution and sharing of safety data and analyses that all divisions/functional areas are aware of trends, hazards, and safety performance in all other areas.

To ensure that risk-based mitigations or strategies are identified and recommended through frontline engagement via the Public Transportation Agency Safety Plan Review Committee (in future reviews this committee will become the Bipartisan Infrastructure Law (BIL) Committee). Such actions are taken to reduce the likelihood and severity of consequences identified through risk assessment; to identify mitigations or strategies that may be ineffective, inappropriate, or were not implemented as intended; and to identify safety deficiencies for purposes of continuous improvement.[2]

Sources of data at KCM include, but are not limited to:

- Employee reporting systems, including self-reporting
- Field reports and observations from supervisors and managers
- Preventive maintenance and other scheduled inspections
- Drills, exercises, and after-action reviews from events
- Internal safety and security audits, and internal controls, reports, and activities
- Quality assurance and quality control inspections, audits, and other activities
- Customer and public comments, complaints, and recommendations
- Employee, passenger, and public reports of injury
- Planning and scheduling data collection
- Key performance indicators
- Incident reports and investigations (hazards, collisions, derailments, security, etc.)
- National Transportation Data (NTD) collection and reporting
- Safety activities (job briefings, awareness campaigns, division/functional area meetings)
- Safety and security certification, system modification, and procurement activities
- Drug and alcohol compliance programs
- Training and Neogov reporting
- Rules and procedures compliance activities

[2] Meets the requirements set forth in the BIL (49 U.S. Code § 5329(d)(5)

- Safety and Security committee activities and reports
    - Committee membership: Metro Transit Chief Safety Officer, Metro Transit SMS Executive, and two members designated by ATU 587
- Transit asset management activities

The frequency with which data is analyzed, the process of development of annual performance targets and objectives related to Safety Management System compliance, how progress is monitored toward those objectives, how data on progress is shared system-wide, and how corrective actions for deficiencies or non-compliance are addressed is the focus of the Safety Management System.

KCM always seeks to broaden and refine the focus of its monitoring activities to ensure safety risk mitigations are included in ongoing data capture. The agency requires all division/functional areas to observe normal operations—including in the field—and to gather voluntary, de-identified data and information through its employee reporting program. Such processes are followed to ensure that hazards are identified as soon as possible, and that data is collected from the activities to analyze trends and prevent re-occurrences and future adverse consequences.

Each division/functional area submits its data reports to the Safety, Security, and Quality Assurance Director/Chief Safety Officer and the Director in its area for review and verification. Division leadership is expected to discuss data and safety performance at the to-be-established Bipartisan Infrastructure Law (BIL) Committee. The meeting (via Metro Leadership Team meetings) is designed to ensure that deficiencies and lapses are appropriately addressed in terms of risk and resources system wide.

7.2 Rules and Procedure Compliance Activities

A robust SMS requires ongoing safety assurance activities, including continuous performance monitoring performed in the field with real-time assessment and data analysis, to provide management with timely information as to safety management and performance and meet the requirements of 49 CFR 673.27(b).

KCM division policies establish procedures for the development, revision, maintenance, management, and enforcement of rulebooks and procedures. The future Bipartisan Infrastructure Law (BIL) Committee will provide oversight and executive management review of this process to ensure the consistency and integrity of the rules and procedures compliance process. The Standard Operating Procedure (SOP) requires that the division/functional area maintain accurate compliance records. Records shall be kept both on observations and on action taken to correct observed deficiencies.

Personnel responsible for rules compliance shall be properly trained and refreshed as needed in rules compliance tasks, activities, and proper documentation. It is incumbent upon those performing rules and procedures compliance to report results through their chain of command in as close to real-time as possible, especially for needed corrective action.

7.2.1 Annual Compliance Assessments

To accurately identify practical drift, the division/functional area must conduct a procedures compliance assessment at least once annually. Each division/functional area will have standard operating procedures for this process.

Each division/functional area is required to enter its data on rules and procedures compliance in a database so that analysis and trending can be performed. The Safety, Security, and Quality Assurance Director/Chief Safety Officer or designee will perform oversight and assurance on rules and procedures

compliance, and verify hazard assessment, corrective action, and reporting compliance. The Bipartisan Infrastructure Law (BIL) Committee has oversight of this process and will discuss compliance activities and outcomes in the future Bipartisan Infrastructure Law (BIL) Committee meetings.

7.3 Internal Safety Audits (Reviews)

KCM requires internal safety reviews to monitor compliance with its Safety Management System.

7.3.1 Internal Safety and Security Audit Program

Each division/functional area will be reviewed for compliance with the PTASP—and all of the division/functional area internal requirements—once every three years. Non-compliances, deficiencies, and failures of the Safety Management System require corrective action to be developed and implemented by the division/functional area.

7.3.2 Safety Performance Monitoring and Measurement

A transit agency must establish activities to address the following:

- Monitor its system for compliance with, and sufficiency of, the agency's procedure for operations and maintenance
- Monitor its operations to identify any safety risk mitigations that may be ineffective, inappropriate, or were not implemented as intended
- Conduct investigations of safety events to identify causal factors
- Monitor information reported through any internal safety reporting programs

Under these requirements, each division/functional area will conduct a review of applicable safety standards as part of its internal controls process. The process will be fully documented in the internal controls report, and corrective action will follow all requirements for the internal control process.

7.3.3 Internal Controls

The FTA's guidance documentation for implementation of 673.27(a) states: "Each transit agency must conduct an annual review of the effectiveness of its safety risk mitigations."

Pursuant to this requirement, each division/functional area must annually audit its own Safety Management System compliance; that is, each division/functional area must audit its safety policy compliance to ensure that hazards are identified and addressed through the SRM process, which results in safety risk mitigations monitored through the Safety Assurance process by persons trained and qualified to do so. Methods can include safety promotion activities, including communication about progress toward safety targets. This program is called "internal controls." Each division/functional area must have a procedure to perform internal controls, which is implemented by its properly trained and qualified key SMS personnel, with the assistance of SMEs if needed, and the oversight of the Safety, Security, and Quality Assurance Chief Safety Officer to ensure integrity and compliance.

Internal controls must be performed annually prior to the start of the revision process of the PTASP, so that any appropriate necessary modifications to the PTASP can be incorporated during the revision process. This requirement aligns with the expectation that the FTA has expressed in its guidance documentation that continuous improvement (49 CFR 673(d)(1) activities should be completed in conjunction with the annual review and update of the safety plan.

7.3.4 Monitoring of Safety Performance Measures

Monitoring of the systemwide Safety Performance Measures, identified in Section 1 of this document, requires each division/functional area that collects data directly applicable to the Performance Measures to report these measures through directors monthly at the Monthly Business Review. This activity should be documented as part of the SOPs required of each division/functional area.

Each division/functional area is required to monitor employee reporting in its area and report out monthly on activities related to employees who report safety issues directly to their division/functional area for investigation and remediation. The Safety, Security, and Quality Assurance Chief Safety Officer or designee will conduct monthly assessments of the anonymous hazard and safety reports and any reports that the Safety, Security, and Quality Assurance Chief Safety Officer receives directly, unless anonymity would be compromised where it was specifically requested. Division/functional area monitoring information will be provided to the Accountable Executive regularly for each area under the Directors' control and discussed at the Monthly Business Review on a rotational basis.

Internal safety reviews are designed to monitor all activities and functions, identify non-compliances and mitigations, identify hazards, and implement corrective actions to reduce risk to the agency, and to identify any existing mitigations that may be ineffective, inappropriate, or were not implemented as intended as required under 49 CFR 673(b)(2).

Any division/functional area that has a non-compliance, deficiency, or defect in its safety management program must develop a corrective action through its key SMS personnel and implement it according to the approved time frame.

7.4 Maintenance and Support Areas

7.4.1 Preventive, Predictive, and Corrective Maintenance

For each area requiring maintenance activities, the Maintenance Control Plan will describe, as applicable:

- All inspections, their intervals and requirements, and their documentation, verification, and distribution
- The standards (regulatory, industry, and internal) for all aspects of maintenance
- Procedures for all aspects of maintenance and where to find them (OEM manuals, Maintenance Management of Information System, etc.)
- Testing processes and procedures for all maintenance activities
- Standards and requirements for scheduled maintenance, deferred maintenance, and determination (destruction/condemnation/disposal)
- Sources of reporting for deficiencies
- Equipment and small/large tools required to perform the maintenance activities
- Minimum training requirements for personnel engaged in maintenance activities

7.4.2 Hazard Management, Quality Assurance, and Quality Control

For all maintenance and support areas, the Maintenance Control Plan will describe:

- Procedures and documentation of how hazards are managed in daily activities
- Defects and issues found in inspections

- Work order opening, tracking, and closing
- Failure trend analysis of hazards associated with the maintenance activities in the area
- Quality assurance and control procedures and activities applicable to:
    - Production
    - Procedures
    - Parts and supplies
    - Equipment
    - Documentation
    - Data collection and analysis
    - Schedules
    - Lifecycle assessment
    - Transit asset management

7.4.3 Lifecycle Planning

For all maintenance and support areas, the Maintenance Control Plan (MCP) will describe procedures and activities supporting lifecycle planning as appropriate. Input from the division/functional area must be incorporated into the acquisition process for new equipment, the rehabilitation programs for facilities and equipment under its care and control, the determination of equipment/facility useful life, and the disposal process. The MCP will also include the process and activities of each division/functional area for reliability and maintainability studies, which are mandatory for new systems and equipment and rehabilitations, as the process of decision-making for allocation of resources for safety must be fully documented, and lifecycle planning is a critical aspect of that decision-making process.

7.4.4 Engineering

For all maintenance areas, the Maintenance Control Plan will describe all procedures and activities for which engineering support is required. This includes changes to equipment design, function, and configuration; support in the acquisition process; testing and assessment procedures; changes in procedures, parts, fabrication, or methodologies for maintenance; reliability and maintainability studies and assessments; lifecycle planning; failure trend analysis; hazard identification and analysis, including Failure Mode and Effects Analysis (FMEA), Failure Mode Effects and Criticality Analysis (FMECA), and other engineering assessments; and division/functional area configuration management support activities, including as-built, schematics, and other diagrams.

The Maintenance Control Plan sections on engineering must describe how engineering documentation is developed and maintained, by whom it is authorized, its review and revision intervals, and where it is archived and maintained for the entire agency to review.

7.4.5 Transit Asset Management Plan

For all applicable maintenance and support areas, the Maintenance Control Plan will describe procedures and activities required to support transit asset management and the development and maintenance of the Transit Asset Management Plan (TAMP).

7.5 Public Health

Metro Transit considers mitigation strategies related to exposure to infectious diseases through its Safety Risk Management process. Mitigations will be determined consistent with guidance and best

practices identified by the Centers for Disease Control and Prevention and Federal/State health authorities.

8 Management of Change

Change management is a process for identifying and assessing changes that may introduce new hazards or impact the transit agency's safety performance. The FTA indicates that a transit agency must determine how a change may impact its safety performance and then evaluate the proposed change through its Safety Risk Management process (under development) to analyze the proper mitigations needed to address risk associated with the change. The ESC is responsible for ensuring that change is properly managed at all levels, and for guiding decision making and resource allocation.

A robust SMS requires that the agency understand that all change introduces risk, and that risk must be managed appropriately through the Safety Risk Management process. Change can introduce new hazards or have an impact on the suitability or effectiveness of existing mitigations. Each department and functional area must, both proactively and through its safety assurance activities, ensure it identifies all change, evaluates it appropriately, and implements mitigations so that risk is managed to acceptable levels during and after the change. The change management policy will be designed to ensure that operations may not continue or proceed in the changed environment until the change is evaluated to determine the impact on safety; and if there is increased safety risk, the risk is mitigated to an acceptable level.

All change management at KCM will be managed by this process through documented procedures, which are implemented through the key SMS personnel.

The activities the FTA has identified to ensure that change is properly recognized include the following:

- Monitoring service delivery activities (including field observations)
- Monitoring operational and maintenance data
- Assessing external information
- Assessing the employee safety reporting program
- Conducting evaluations of the SMS
- Conducting safety audits, studies, reviews, and inspections
- Conducting safety surveys
- Conducting safety investigations

The following areas are specialized sources of risk associated with change.

8.1 Safety and Security Certification

Safety and Security Certification (SSC) is an FTA-defined process of verifying that certifiable elements and items comply with a formal list of safety and security requirements developed for major construction, rehabilitation, or vehicle procurement projects. Certifiable elements are those project elements that, as determined through hazard analyses and/or threat and vulnerability assessments, can adversely affect the safety and security of customers, employees, emergency responders, or the public. The requirements are defined by design criteria, contract specifications, applicable codes, and industry safety, and security standards. SSC is applied to projects that may reasonably be expected to pose hazards or security risks to KCM passengers, employees, and emergency response personnel.

SSC is accomplished through a collaborative effort between the Safety, Security, and Quality Assurance Chief Safety Officer or designee and the applicable project team, which may include representatives from other KCM departments, as well as project contractors.

The safety and security certification process will ensure that:

- Design and operating hazards and security vulnerabilities are identified, evaluated, and properly controlled or mitigated prior to the commencement of passenger service
- All safety and security critical elements are evaluated for compliance with all identified safety and security requirements during the design, construction, installation, testing, and start-up phases of a project
- All systems are operationally safe and secure for customers, employees, emergency personnel, and the public, prior to entering (or re-entering after modification) revenue service or being returned to use by KCM personnel

The Safety and Security Certification Review Committee (SSCRC) is accountable to the ESC for the overall conduct and implementation of the Safety and Security Certification program, and for approval of certification documentation in accordance with the SSCP. The makeup of the committee varies with the nature of the project as described in the SSCP and may include SMEs.

8.2 System Modification

Physical changes to the system that are not governed by the Safety and Security Certification process often fall under the engineering modification process. This includes evaluation and assurance that a proposed modification does not create unacceptable or undesirable risks in a system, vehicle, equipment, or facility previously certified under the System safety and security certification process.

Departments and functional areas that contemplate or require a physical change must follow the requirements of the change management policy, which will define the process for initiating, evaluating, processing, and implementing modifications or improvements to systems, vehicles, facilities, and equipment.

IT systems requiring physical changes will be subject to a different process for assessing and addressing the risk associated with change. Configuration changes proposed for the agency will be risk rated through any contractor performing work and will be approved by the Bipartisan Infrastructure Law (BIL) Committee.

8.3 Configuration Management

Configuration management encompasses the administrative activities concerned with the creation, operation, maintenance, documentation, controlled change, and quality systems of the agency. The Configuration Management Program will ensure that the documentation of KCM property, vehicle, equipment, and systems design elements, as well as systemwide documentation, is accurate and current. This program will ensure that all documentation of required tasks, processes, and activities are reviewed and revised as needed or on an annual basis. This review and revision will coincide with the review and revision of the ASP. All changes to documentation are implemented, as required, through the Safety Risk Management process and fully documented. Furthermore, all documentation is maintained in accordance with the relevant requirements of 49 CFR 673 and 674. Specifically, documentation in all forms, including versions, revisions, supersessions, and obsolescence, is preserved

for a minimum of three years from the date of creation. However, there is an exception for risk assessment and safety training documentation, which is maintained indefinitely.

The KCM Configuration Management Program establishes authority and responsibility to manage the risk associated with changes to the configuration of all KCM infrastructure and facilities. Documentation is controlled and tracked for all configuration issues. This includes document and version control, access to and maintenance of documentation, and a document inventory tracking the status of all documentation managed by the department or functional area.

8.4 Procurement

The FTA's guidance documentation for 49 CFR 673.25(b)(1) indicates that "the FTA expects each transit agency to develop measures to ensure that the safety principles, requirements, and representatives are included in the transit agency's procurement process."

The division/functional area baseline risk assessments should establish the acceptable risk associated with existing processes and procurement criteria. When the agency must make new procurements; changes to existing materials, vendors, and contracts; or makes changes to the procurement process itself, KCM (in partnership with impacted labor procurement committee representatives) must make these changes to the system per the Safety Risk Management process of this Plan.

The process established for procurement follows the same steps as other change:

- The division/functional area must assess whether the change (procurement) will carry risk and if that risk must be mitigated in order to implement the change.
- A risk assessment following the principles and procedures delineated in Section 2 must be performed and documented through a qualified and certified individual in the department or area, supported by SMEs and end users where appropriate, including the Safety, Security, and Quality Assurance Chief Safety Officer, engineers, end users, and impacted labor procurement committee representatives.
- Once risk is established, mitigations, as needed, must be in place before the change can be made.
- The change (procurement) can be implemented.

Procurement maintains internal documentation of the required tasks and activities to effect procurements within statutory and internal requirements, including the requirements of this section.

9 Continuous Improvement

Continuous Improvement is the process by which KCM examines its safety performance to identify safety deficiencies and carries out a plan to address the identified safety deficiencies. It consists of formal activities designed to evaluate the effectiveness of the Safety Management System, and specifically, it will:

- Identify the causes of sub-standard performance of the Safety Management System
- Determine the implications of sub-standard performance of the Safety Management System in operations
- Eliminate or mitigate such causes

Safety Management System key elements are proper management of all activities through the Safety Risk Management process; proper change management; compliance activities, including those contained in Section 3; and performance auditing. The FTA considers the auditing process to be the primary means of evaluating Safety Management System performance.

Annual internal controls are primary in this process because they are performed and completed prior to the beginning of the revision process for the PTASP. Once deficiencies in the Safety Management System are identified, corrective action must be implemented.

SECTION IV: SAFETY PROMOTION

A robust Safety Management System depends on ongoing management commitment to addressing risk through training and communication. Safety Promotion is the component of SMS that demonstrates this commitment to ensure all employees are properly trained to perform their tasks and activities safely and to encourage and motivate employees in all divisions to communicate openly about safety.

10 Safety Communication

Effective safety communication is an essential element of safety promotion. The purpose of safety communication is to:

- Ensure that personnel are aware of the SMS
- Convey safety-critical information
- Explain why safety actions are taken
- Explain why safety procedures are introduced or changed
- Provide feedback on employee-reported hazards and safety concerns

The feedback loop is discussed in the Safety Risk Management section as it relates to the employee reporting program. Other important safety communications avenues are described in this section.

The primary safety communication responsibility of Executive Management at KCM, under the requirements of 673.23(c), is to communicate the Safety Management Policy actively and personally to all employees and contractors. Any changes to the Safety Management Policy must be approved and distributed through the future Bipartisan Infrastructure Law (BIL) Committee to all employees. This is primarily implemented through the committee process, but every Division Director is also required to visibly endorse the Safety Management Policy to employees in the area they control.

10.1 Communication Avenues

KCM uses multiple means to communicate safety information, why and what actions have been taken, and why procedures are implemented or modified, including:

- Special Orders
- Safety Advisories and Safety Directives
- Safety Bulletins (distributed as needed)
- Safety Blitzes
- Safety Data Analysis Report (SDAR) (distributed monthly by KCM Safety)

10.1.1 Accountable Executive Briefing

At least monthly, the Safety, Security, and Quality Assurance Chief Safety Officer provides a safety briefing to the General Manager and members of the ESC. Topics include, but are not limited to, accidents, outside inspections, recent hazard management activity, safety training status, base safety committee meetings, regulatory issues, major projects, regular duties, security, emergency management, and any high-level safety risks and/or activities that have been conducted or are ongoing.

10.1.2 Management Leadership Team Briefing

Every month, the Safety, Security, and Quality Assurance Chief Safety Officer provides a briefing of safety and security activities to members of the Management Leadership Team. Topics include regulatory agency activities and hazard management activities.

10.1.3 Monthly Business Review

Every month, members of the safety and security workgroups provide updates to division leaders on trends and statistics including accidents/incidents, on-the-job injuries, fare enforcement, fare violation, and safety training.

10.2 Safety Committees

10.2.1 Bipartisan Infrastructure Law (BIL) Committee

King County Metro Transit and its labor partners are mutually committed to providing a safe workplace and increasing employee engagement on safety and security matters. The BIL Committee consists of an equal number of frontline employee representatives selected by the labor organization representing the plurality (majority) of the frontline workforce and management representatives.

The BIL Committee provides a structure that facilitates transparent decision-making, communication, and collaboration between Metro and its labor partners while meeting the requirements of the FTA under the Bipartisan Infrastructure Law. Specifically, this committee is responsible for the following:

1. Review and endorse the Metro Transit Safety Plan annually.
2. Identify, recommend, and analyze risk-based mitigations or strategies necessary to reduce the likelihood and severity of consequences identified through the agency's safety risk assessment.

The BIL Committee meets monthly regarding risk assessment and mitigations and briefs the Accountable Executive quarterly to report on progress.

10.2.2 Employee Safety Committees

Employee Safety Committees are front-line level safety committees established to address local safety issues through the Safety Risk Management process and to assist in developing effective safety programs. The Employee Safety Committees establish and foster a close working relationship with employees, unions, and management regarding safety issues. Employees are trained that they can report any perceived safety issue or hazard to their Employee Safety Committee representative for investigation and resolution if they choose to do so. SMEs also serve as advisors to the Employee Safety Committees. Membership is determined by each individual committee charter and will include local supervision, union representation, and non-management employees. Unresolved hazards from the Employee Safety Committee shall be forwarded directly to the future Bipartisan Infrastructure Law (BIL) Committee.

In addition, employees can report hazards directly via the anonymous reporting avenues established by KCM.

11 Competencies and Training

The FTA has provided in its guidance documentation for 49 CFR 673.29 the expectation that each transit agency will establish a comprehensive safety training program. To fulfill this requirement, KCM is developing a system-wide training policy and program. This training program includes requisite information on the training responsibilities for all divisions, including:

- Public Transportation Agency Safety Training Program (industrial safety, respirators, blood-borne pathogens, Safety Management Systems, hazard management, etc.)
- Division and functional area responsibilities for training, training functions at KCM, and areas responsible for providing training, including all on-the-job training and technical training programs for supervisors
- Vendor-provided training programs controlled by KCM
- Required initial training by division, area, and position (including training matrices)
- Technical and administrative training requirements, certifications, and qualifications (internal and external) by position
- Required refresher training by division, area, and position
- Contractor training requirements
- KCM Public Transportation Agency Safety Training Plan, including training records creation, access, and maintenance
- Training Quality Assurance Program (to be developed), including continuous improvement, gap analysis, and feedback and assessments (student and trainer)
- Train-the-trainer program (to be developed)

Division Directors in each area are responsible to ensure that training requirements are documented and implemented in the areas under their control. They are also responsible for ensuring that any training provided under their leadership meets the requirements of the KCM Public Transportation Agency Safety Training Plan.

Division leadership is responsible for ensuring that all employees know and understand their training duties and responsibilities, and that training requirements are met.

All employees are responsible to attend all required training and to communicate their training needs, deficiencies in the training programs, and hazards associated with their training.

11.1 Safety Training Metrics

Upon implementation of an agency-wide learning management system, the following metrics will be used to track safety training:

- Numbers trained by division
- Numbers trained by method of delivery
- Total number of safety training hours delivered monthly
- Percentage of employee trainings completed
- Metric to reflect satisfaction with trainings

The management of safety is the highest priority of KCM. KCM is committed to safety from the highest levels of management to frontline employees. KCM will ensure that all transit service delivery activities take place under a balanced allocation of organizational resources, to achieve the highest level of safety

performance and meet established standards. KCM is committed to developing, implementing, maintaining, and constantly improving its processes.